THE

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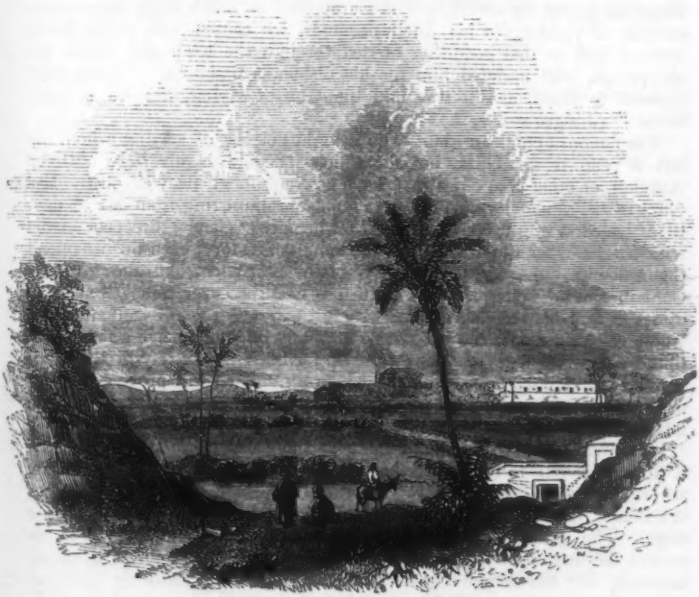
SEA-COAST AND SHORES OF CILICIA.—No. XII.



GAZA.

THE last point we reach in crossing southward in the Holy Land is the beautiful country that lies round the suburbs of Gaza, once renowned for the extraordinary feats of strength displayed by Samson. In winding along towards Gaza we crossed over the stream in which St. Philip encountered and baptized the eunuch, and almost immediately afterwards caught a sight of the minarets of the town, standing over ten or a dozen handsome mosques, which had an admirable effect as viewed from the distance, mingled as they were with stately trees and olives of a greater height than we had ever met with in Syria. Gaza was a town of the

Philistines and part of the tribe of Judah; it was one of the five principalities of the Philistines. "And these are the golden emerods which the Philistines returned for a trespass-offering unto the Lord; for Ashdod one, for Gaza one, for Askelon one." (1 Sam. vi. 17.) "He smote the Philistines even unto Gaza and the borders thereof, from the tower of the watchman to the fenced city." (2 Kings xviii. 8.) The day was extremely sultry: large flights of beautiful white doves, with an azure ring round the neck, were passing overhead in the direction of the town, and the forest of olive-trees resounded with the notes of birds of song, whilst the dark-brown squirrel leaped from branch to branch. The first man we encountered was a guardian of the Quarantine establishment, who was prowling about the outskirts of the town in search of booty; not such as we afforded him, for he immediately seized upon the muleteer's bridle and extorted from him a buckshish, under penalty of being put into quarantine. This process answered well enough with natives, but he rather burnt his fingers by meddling with Europeans; as, much to his indignation, in lieu of yielding to his illicit demands, we caused him to be firmly secured, and in that condition carried through the town and before the authorities, who mulcted him for his dishonest practices. "Then went Samson to Gaza, and it was told the Gazites saying, Samson is come hither." (Judges xvi. 1, 2.)

The famous herculean giant, who thought nothing of slaying a lion, has left a renown for Gaza, but for which it could barely have outlived Askelon, or other like cities that have now crumbled away to dust. But Gaza is still a fine city, and has been going on improving from day to day, till at length a bright era has dawned for her citizens, and a direct commerce with England, for the first time in the annals of history, been thrown open; the schooner "Elizabeth Rose," Captain Lawrence, and the "Flirt," Captain Davis—being the first British vessels that ever came from Gaza direct to London—having arrived with full cargoes of very excellent grain. These vessels are only the precursors of many others; and in a few years' time we may hope to see Gaza raise up for itself a notoriety in the commercial world, only to be rivalled by Beyrout. Such will prove a blessing to the inhabitants, and be a paving-stone upon which to build any future missionary efforts.

Gaza was subject to the Chaldeans who conquered Syria and Phœnicia: it afterwards fell to the lot of the Persians, several of whose monuments are still in existence. For two months Gaza baffled all the efforts of Alexander the Great, who was repeatedly repulsed and wounded in the siege. The gallant defender, Betis, ultimately submitting, suffered in his person the iniquitous revenge of a bloodthirsty tyrant; for Alexander, imitating the less-savage treatment of the corpse of Hector by Achilles, caused Betis's ankles to be bored, and then dragged him round the walls tied to his chariot-wheels.

In the times when the Caliphs flourished, Gaza must have been a magnificent city: we traced one portion of its ruins, part of which is now the residence of the Cadî, or Judge, and I found that this single palace had in the days of its pristine splendour extended over upwards of a quarter of a mile of ground; and very many parts of it, still in excellent repair, showed us, by the subterranean caverns that underlined the rooms, that probably the whole extent of building had abounded with these caverns, all used for the most infamous purposes that barbarous cruelty could inflict; and even down to so late a period as the days of Ibrahim Pasha of Egypt,

XUM

when, we were informed, more than one hapless victim was thrown into these caverns, and left to starve, watching death come upon them in all the agonies of famine and thirst.

The streets of Gaza are a perfect nuisance, though, if they were kept clean, there are many of them wide and commodious; the buildings are very fine, especially the bazaars and some of the modern houses constructed with all the taste and attention to Oriental luxury that pervade the cities of Damascus and Aleppo. We called upon a Greek merchant established here, and were received with much courtesy and kindness. Conducting us over a noble and spacious courtyard, he finally ushered us into a little sitting-room which looked out upon the yard, and was a pleasant, cool retreat from the sun during the hotter hours of the day. His wife came out, and sat and conversed with us without any restraint; her name was Delilah, a name very common amongst the Gazites of the present day, and possibly through many ages from the time of Samson. This lady was dressed in a pretty chequered pattern of silk cumbass, a species of dressing-gown with long sleeves, which fastened round the waist with a silver girdle, clasped by gold clasps set with precious stones: her under-garments were of the finest silk. Over all she wore a long green cloth robe fitting tight to the body, and edged and ornamented with gold lace; her hair was neatly braided and thrown over her shoulders, her cap covered by the windings of a coloured muslin handkerchief, and her feet were encased in the yellow baboochee, or slipper: this completed her costume. She sat opposite to us on the low divan that ran all round the room, surmounted with cushions of a gay chequered silk pattern: the room itself, though built of masonry, was completely lined with wood, replete with recesses and cupboards, and almost on a level with the entrance door. A shelf runs round the room, over which again there are small lattice-worked windows which are generally papered over in winter. The accompanying sketch (page 340) conveys an accurate idea of a Syrian lady seated in her muslaba. She has bound a white napkin round her head, because it is not thought decent to leave the back of the neck and the ears bare in the presence of strangers. On the shelf above her head are, first of all, her narghilee, or hubble-bubble, which she smokes regularly every evening when the fatigue and bustling about of the day is ended; next to the narghilee, with its winding, snake-like tube, we see a china jar, which contains the timbric, the ingredient smoked, a rare narcotic and poisonous weed which grows only in Persia, and which requires a great deal of washing and squeezing and straining before it can be smoked with safety. Next to this jar is the earthenware goblet, which, from its being porous, keeps the water nice and cool, and makes it a most delicious and refreshing drink on a hot sultry day. The last article we see is the rosewater bottle; the good lady sprinkles us plentifully with this when we get up to withdraw, and say Katharacoom! and she replies Masalarmi!

The inhabitants of Gaza are a very poor people, finding occupation solely in ploughing or sowing, or in the harvest for a few days. The grape and olive harvests also give them a little occupation; but the advent of English vessels will be sure to enrich them by finding occupation for their labour. The population may be reckoned at twenty thousand souls, of whom many are Egyptians, and not more than three thousand Christians. But the Turks are but little fanatical in Gaza; and there is actually one of their mosques which, from its having a cross in the lofty ceiling, is identified with a Christian church, and a few

Christians in favour with the imaums were permitted to enter here and pray—a thing unheard of in any other part of Turkey. When we visited this mosque a poor man was praying, apparently with great

devotion, for he never lifted up his eyes to gaze upon us, though it was a rare sight to see Europeans hatted and spurred, walking through a mosque, but continued praying, ever and anon beating upon his chest. We paused and looked upon this man, and then upon the old Turk who was reading aloud to himself from the pages of the Koran, and the beautiful parable of our Saviour flashed across our minds: "Two men went up into the Temple to pray, the one a Pharisee, and the other a publican. . . . The publican, standing afar off, would not lift up so much as his eyes unto heaven, but smote upon his breast, saying, God be merciful to me a sinner. I tell you this man went down to his house justified rather than the other." (Luke xviii. 10—14.)

In Gaza there is a remarkable well situated on the seaside, which, though the tide washes over it every day, still preserves the sweetness of its waters so much so that it is the favourite resort of all the women in the neighbourhood, and often of an evening you see pretty girls here congregated drawing water for the sheep and cattle, which they pour into large stone troughs, and any one of these girls might be Rebekah in one's imagination.

Fruits are abundant, particularly that of the prickly-pear, which here

attains a size and excellence unrivalled in the East. Many of the poor classes subsist for months upon this fruit, and it is found to be both nutritious and wholesome—so mercifully does the Almighty provide for the wants of his creatures. Game was abundant in the neighbourhood, wild ducks, partridges, and woodcocks: large flights of quails and similar flights of doves arrive at stated seasons in the year, in such an exhausted state that they are easily captured by the natives.

Gaza produces wheat and other grain, legume seed, soap, olive oil, and excellent olives; and not far to the southward of it are some very extensive salt lakes.

We rode out of the town on a visit to the Quarantine, which is situated in an airy and pleasant position, commanding, from the upper room, a view. Here we watched the sun set in his glory, lighting up the sand-hills to look like heaps of gold, and the next day we left Syria and these pleasant shores.

If the reader ever visits these distant parts, he will find they have been faithfully portrayed in these sketches; and may he have cause, like ourselves, to thankfully remember the words of comfort breathed by the Psalmist:—

"At home, abroad, in peace, in war,
Thy God shall thee defend;
Conduct thee through life's pilgrimage
Safe to thy journey's end." (PSALM CXXI. 9.)

GLIMPSES OF LIFE AMONG THE LOWER SEA-THINGS.

JELLY-FISHES.

VOYAGERS in tropical seas tell us of the glorious beauty of that phosphorescent light which, when the sun goes down, shines around the ship, and flashes in bright and glowing sparks upon the waters. Now gilding every wave-crest with a foam of light; now marking the pathway of the midnight breeze by a track of quickly-waning radiance, which spreads afar with a movement resembling that of the Aurora Borealis; now glancing in myriads of many-hued gems over the on-pressing prow which ceaselessly cuts her way amongst them; and now sparkling with a dazzling, but intermittent, light in the dark wake she leaves behind her.

The least susceptible mind cannot fail, in some measure, to realize a scene of beauty so transcendant; and it is not, therefore, astonishing that every class, from the keenly-observant man of science to the most humble emigrant who "crosses the line," should dwell with delight on a scene which so far surpasses all attempts to picture in words its exquisite loveliness; yet, as it is through the medium of words alone that the untravelled dweller in a quiet inland home can "see in thought" this "wonder of the ocean," we will borrow the following descriptions from two of our well-known naturalists:—"While sailing," says Darwin, in his interesting 'Journal of Researches,' "a little south of the Plata, on one very dark night, the sea presented a wonderful and most beautiful spectacle. There was a fresh breeze, and every part of the surface, which during the day is seen as foam, now glowed with a pale light. The vessel drove before her bows two billows of liquid phosphorus, and in her wake she was followed by a milky train. As far as the eye reached, the crest of every wave was bright, and the sky above the horizon, from the reflected glare of these livid flames, was not so utterly obscure as over the vault of the Heavens. . . On two occasions I observed the sea luminous at considerable depths below

the surface. Near the mouth of the Plata, some circular and oval patches, from two to four yards in diameter, and with defined outlines, shone with a steady but pale light; while the surrounding water only gave out a few sparks. This appearance resembled the reflection of the moon or some luminous body; for the edges were sinuous from the undulations of the surface. The ship, which drew thirteen feet of water, passed over without disturbing these patches. Therefore we must suppose that some animals were congregated together at a greater depth than the bottom of the vessel." This last remark coincides with that of the Rev. Mr. Guilding, who says that in the more shallow parts of the Caribbean sea, he saw animals at the bottom of the water "emitting the splendour of a lamp."

Professor Rymer Jones gives the following account of a blending of several lights, which he witnessed in the Bay of Naples, and which he thus describes:—"The thundering mountain, with its glowing sides of lava casting gleams of ruddy fire across the waves, the gentle moonlight dancing on the sea, the faint grey of dawn tinging the east, whilst through its whole extent the heaving bay streamed with phosphorescent scintillations! At intervals volcanic lightnings, flashing from the pitchy cloud that overhung the mountain, mingled their wild glare, and formed a scene not easily nor soon forgot."

Although this phenomenon of waves—

> "Spangled with phosphoric fire
> As though the lightnings there had spent their shafts
> And left the fragments glittering in the field"—

is more gorgeous and brilliant in the tropical climates, still the sea, says Humboldt, "is luminous in all latitudes;" and our own shores present a similar scene on the still warm evenings of summer and autumn,* although, of course, their mild radiance cannot equal the brilliancy of warmer climes, where everything of life takes a tinge from its sun-illumined skies.

Even so early as the time of Pliny it was well known that this light proceeded from various Medusæ, but the first accurate observations on the subject were made by Forskal, about the year 1762.† These observations led to many and more extended inquiries, which have materially elucidated the subject. The luminous principle extends to some of the larger species, as we have already shown; but it chiefly exists in beings so small that, according to the well-known calculations of Dr. Scoresby, a cubic foot of water must contain 110,592; or, by the more moderate computation of Rymer Jones, from thirty to forty thousand, in each square foot, as they swim the fourth of an inch apart; and through this mass of life "the vessel ploughs her rapid course, nor finds the slightest diminution in their number."‡ A mass it is of ceaseless, endless life, which leaves the mind shrinking with the sense of its own insignificance, its inability to follow the thought of such "myriads of living points," while it yet, at the same time, glows and expands beneath the elevating influence, by which the contemplation of life in all its forms draws it into closer and nearer communion with the Maker and Father of them all.

We must, however, unwillingly quit this, to us most fascinating subject, to examine with more minuteness the individual beings which thus shine forth their Maker's praise to the admiring gaze of the true-hearted observer of nature. And this examination we must commence with a few of the dryer technicalities of their classification, for which we must bespeak the patience

* Macartney found that the luminous appearance was increased when the water in which the animals were placed was warmed.

† Professor E. Forbes. ‡ Rymer Jones.

of our readers. Naturalists have divided the animals of which we treat into the two sub-classes of Medusides and Acalephes proper; the first possessing a circular, or nearly circular, cup, or umbrella-shaped body; having, in a few of its genera, an internal plate, formed of a sort of cartilaginous substance. The rim of the body is usually fringed with "tentacular ciliated appendages." The second, or class of Acalephes proper, has an irregular, multiform, and sometimes sphere-shaped body, with thready appendages and ciliary fringes. Both are, however, more usually included under the general and applicable term of Acalephes, as which we shall describe them.

Each of the above classes is again divided into sub-orders: the Medusides contain—1st, the *Pulmogrades*, so named from their movements, which consist of alternate dilations and contractions, resembling the action of the lungs in breathing. And, 2nd, the *Cirrhiogrades*, so named from the *cirrhi*, or tentacles hanging from their lower surface, by means of which they progress. They are further distinguished by the presence of the internal plate which we have before mentioned.

The Acalephes proper contain, 1st, the *Physogrades*, so called from an *air* bladder being the chief organ of their progressive movements, as in the Physalis, or Portuguese man-of-war, which floats like some fairy vessel beside the proud ship which man has made to himself. And, 2nd, the *Ciliogrades*, which are named from their power of rowing themselves from place to place by means of those vibratile hairs known as *cilia*; such is the Beroë, which, from the resemblance it bears in form to the sea-urchin, or sea-egg, is believed by the boatmen of the North to be its young.

Each of these orders is once more subdivided into families and genera, on which we will not now enlarge, as our limits forbid our giving a classified account; and we must, therefore, confine ourselves to an endeavour to lay before our readers some idea of what the Germans would perhaps term "the inner life" of these all-marvellous creatures.

When, after some raging and beating storm, we see cast upon the glistening sands a shapeless and apparently helpless mass of jelly-like substance, commonly termed by fishermen "blubber," it is very difficult, for even the most careful observer, who has never had an opportunity of watching it in its native element, to realize the fact that this mass is not only endued with life, but that it is actually capable of directing its motions at pleasure; of devouring and digesting small crustaceous and entomostraceous animals, and in some cases even vertebrated fish; and of inflicting on its prey, as well as on man himself, stings of no inconsiderable power. Yet such in truth are but a very small part of the wonders which its examination unfolds before our eyes. If we cast the mass into some salt-water pool left by the retreating tide, we shall see it—we will suppose it to be a Pulmograde—unfold its pellucid, many-coloured, inverted, cup-shaped disc, and expand its long tentacle-like arms into the depths of the water, the transparency of which it equals, so as to be hardly discernible. The disc now begins to heave with the lung-like movements before described; by means of which it propels itself rapidly and gracefully through the water with great precision, until it reaches the spot it would attain: its "stomach-mouth," which is situated in the centre of the interior of the cup, now protrudes its lips, and anchors it safely on to some projecting stone,* until hunger or some other motive shall again induce a desire to roam. Then once more the heaving movements commence, some prey is perchance chased, stupified by the powerful sting of the Medusæ, and

* Dr. Johnston.

gradually sucked in, to be very quickly assimilated into its transparent frame. And yet this creature is apparently of such low organization that if left to dry on a marble slab, or other non-absorbing surface, it will gradually melt away, as it were, until no vestige of it, beyond a slight glazy film, remains! The *Rhizostoma*, however, is an exception to the mode of feeding which we have described, for from its centre depends a somewhat massive bunch of leaf-shaped appendages, which are perforated with innumerable pores, through which the creature imbibes its food. It is therefore, of course confined to a liquid diet. The resemblance which this central stem bears to the office and relative situation of the *roots* of a plant, has given rise to the name of *Rhizostoma*.

These are the true type of the Pulmograde; but we must not suppose the umbrella, or cup form, is universal, or even prevalent amongst the jelly-fishes. Even amongst the Pulmogrades it sometimes undergoes considerable modification; as, for instance, in the *Berenice*, from whose flattened disc (instead of the banyan-like pendants which we have already spoken of as falling from its edges) hang countless transparent *hairs*, if we may use such a term of similitude, of the most delicate dimensions, which curl and interlace with the utmost intricacy; or, anon, smooth themselves and hang straight down in the water, floating out behind the animal as it swims; and again waving gently about with a motion which the slightest observation must regard as one of pleasurable sensation. In the *Cirrhiogrades*, we find the form to be that of a flat disc, supplied on the under surface with a short foot-like fringe, and on the upper with a transparent sort of sail, which contains the hard plate of which we have spoken.

In the *Physogrades*, again, it is modified into a bag or bladder, bearing some slight resemblance to the outline of a bird, from which, however, hangs a most fantastic, rainbow-hued tassel, of thready and riband-like appurtenances; or—as in the case of the *Noctilucæ*, which play so prominent a part in the phosphorescence of the sea—it takes a globular, or somewhat reniform shape, with a quaint-looking tail, resembling an apple on its stalk; or in the *Rhizophysa filiformis*, it has a small ovate body, with a tail (as we may term the lengthened tentacle which seems to take the place of the tassel of the Portuguese man-of-war), measuring thirty or forty times the length of the body, which irresistibly brings to our minds the old nursery riddle concerning the wonderful woman with

"Her long tail which she lets fly."

In the Ciliogrades it perhaps, as in the case of the Venus's girdle (*Cestum Veneris*), extends into a riband-like form, often reaching to a length of six or seven feet, of a translucent glassy appearance, which is indeed a zone of beauty, whether it is silently impelled with graceful undulatory movements through the calm waters of the Mediterranean Sea by the countless *cilia* which fringe its edges, and which refract the light in the most vivid rainbow hues, or whether, in the words of Rymer Jones, "In the night it shines with brilliant phosphorescent splendour, visible at a considerable depth, and marking, as if by flame, the creature's path." To this the words of Coleridge may well be applied:—

"I watched the water snakes;
They moved in tracks of shining white,
And when they reared, the elfish light
Fell off in hoary flakes.
* * * *
And every track
Was a flash of golden fire."

In this genera, too, is included the matchless Beroë, or Cydippe, of our own shores, which consists of a transparent and most delicate globe, marked with eight longitudinal bands; on which, at regular intervals, are placed thirty or forty paddles*—invisible to the naked eye: with these the Cydippe, by a most perfect mechanism, rows itself along, and shoots like a brilliant meteor through the waves. This little creature is also furnished with two long and curiously-branched tentacles; which, when not in use, are withdrawn into two pouches on the body, but which are at other times extended on each side. So fragile and delicate is this little creature that it is most difficult to examine it, on account of its falling to pieces with the gentlest handling; and yet it seizes and devours shrimps and other animals which are larger than itself, and is perhaps one of the most vivacious and active of those myriads of races which sport in constant happiness in the ocean.

We must now turn our attention to the mechanism of the bodies of these creatures. Lamarck, denying to them either nerve or muscle, supposed that they could have no voluntary movement; but a very slight examination in their native element will convince any person that they can move "as they list," escaping to the bottom when pursued, following their prey, remaining stationary, or sunning themselves on the surface at their pleasure. "It is moreover well known," says Dr. Johnston, "that they have a nervous system formed after the same plan, and rather more complete than it is in other radiated beings;" while Ehrenberg has shown that the contractions and dilations of the *Pulmogrades* "are the effects of the contraction of muscular fibres radiating from near the centre of the body to the circumference." So that they are far from being so low in the scale of organized beings as was formerly believed by those who based their opinions on the fact of their scarcely leaving any organic remains after the dissolution of their bodies; in addition to the "abundant crystals of chloride of sodium," which Dr. Thomas Williams has, in his recent and valuable researches,† obtained by evaporation from the vital, or chylaqueous, fluid of the Rhizostoma; and which will of course be equally found in the remains of other jelly-fishes.

Yet even with this light, which modern science has thrown on the structure of the sea-nettles, stang-fishes, stingers, or *Orties de mer*, as the jelly-fishes were named of old, if we compare their achievements, and the powers by which they accomplish them, we cannot fail to be struck with the apparent inadequacy of the means to the end, and we are compelled in ignorance to exclaim with the Psalmist, "O Lord, how glorious are thy works: thy thoughts are very deep!"

The power of stinging is believed to reside in a mucus which the fish can throw off at pleasure; and Professor E. Forbes gives the sanction of his high authority to this view, as he found this substance retained its irritating quality after it has been separated from the animal.‡ Only a few, however, of the species sting; "foremost amongst which," says the same author, "the *Cyanæa capillata* of our seas is a most formidable creature, and the terror of tender-skinned bathers. With its broad, tawny, festooned, and scalloped disc, often a full foot or even more across, it flaps its way through the yielding waters, and drags after it a long train of riband-like arms, and seemingly interminable tails, marking its course when the body is far away from us. Once tangled in its trailing 'hair,' the unfortunate who has recklessly ventured across the graceful monster's

* Rymer Jones. † See 'Philosophical Transactions,' 1852-3.

‡ See 'British Naked-eyed Medusæ,' Ray Society.

path, too soon writhes in prickly torture. Every struggle but binds the poisonous threads more firmly round his body, and then there is no escape; for when the winder of the fatal net finds his course impeded by the terrified human wrestling in its coils, he, seeking no combat with the mightier biped, but casts loose his arms and swims away. The amputated weapons, severed from their parent body, vent vengeance on the cause of their destruction, and sting as fiercely as if their original proprietor itself gave the word of attack."

We must now turn our attention to one other amongst the unfathomable wonders of this interesting tribe. We allude to the long-disputed, but now well-authenticated fact of their reproduction. The eggs of the jelly-fish, which are small ovate bodies covered with vibratile hairs, are no sooner brought to light than they row themselves to some place on which they can safely anchor and grow. The body soon lengthens, and gradually spreads into a flower-shaped disc, somewhat of a daisy form: this is now a distinct polype, endowed with a most voracious appetite, and the power of throwing out from its stem buds, which after a time gradually arrive at the form of a true Medusa, and at length separate themselves from the polype and swim away in their perfect shape, as jelly-fishes; while the polype still remains immovable, but capable of casting off constant colonies of these young creatures.

Thus it will be perceived that the generations of the tribe alternate: the offspring of the jelly-fish is a polype, which in its turn becomes the parent of another race of jelly-fishes; or, in the words of one of our naturalists, each individual of the family resembles its grandfather, and not its own father!

Were our limits enlarged we might dwell more fully on the pure delights which the study of these, amongst others, of the lower tribes of animals have afforded to ourselves, as well as to thousands of others; to whom they have proved a refreshment in weariness, a faith-enlivening solace in sorrow and loneliness, a lively pleasure in happier moments, and an ever-new, yet ever-repeated testimony of the love of the Almighty God, whose "care is over all his works."

We cannot, however, resist laying before our readers a somewhat detailed description of an animal of the species which has as yet been seen in only one district of our British shores. Some years ago, when sailing across the grandly-beautiful harbour of Falmouth, our attention was suddenly attracted by the appearance around the boat of several jelly-fishes of surpassing beauty, and of such extreme delicacy of texture that they were at first made visible in the water (which was yet muddy from a recent storm) by their being more transparent than the surrounding medium. On closer examination, as they slowly rowed with their lung-like movements around us, we found them to be of a perfect hemispherical form, of about the size of a small tea-cup, the bodies being perfectly colourless, with the exception of two bands in the interior, which crossed each other at right angles, and which were of a bright but most delicate rose-colour; from the centre floated out four short and star-like lips of the same colour, while the whole of the edge of the cup was gemmed with minute dots of a similar hue. Not being provided with proper nets, all our endeavours to capture one of these tempting prizes were fruitless; and they accordingly remained deposited in a recess of our minds, unknown, and mysterious in their beauty. After the lapse, however, of a lengthened time, chance threw in our way Professor E. Forbes' beautiful 'Monogram of the British Naked-eyed Medusæ,' and there, with a delight which none

but an enthusiastic naturalist can realize, we discovered our identical jelly-fish faithfully and admirably figured, with the information that it was none other than the *Thaumantias pilosella*, a species of which, though abundant in the bays and harbours of Zetland, had been only seen in one British locality, namely, "on the south coast of England, at Falmouth, in the year 1847."

THE PHILOSOPHY OF A SUNBEAM.

THE science of a sunbeam and the science of light are two very different things. Light—says the believer in Newton's theory—is an emission of particles from luminous bodies. Light—replies the disciple of Young and Fresnel—is the undulation of a subtile medium. But a sunbeam is a compound thing. Three distinct principles, or three modifications of one principle, if not more, are associated in every ray of sunlight. These are light, heat, and actinism.

When a sunbeam is admitted into a darkened chamber, and received upon a transparent prism, it is decomposed. A prismatic spectrum of brilliant hues is produced, as we know, on the white wall of the room. The three primary colours—red, yellow, and blue—are the elements out of which the seven-hued image is formed. If a thermometer be now placed in the blue ray of the spectrum, it will point to 56° Fahrenheit, in the yellow ray it will rise to 62°, and a little beyond the red ray it will mount up to 79°. But in an undecomposed sunbeam the heat is the same everywhere. Hence we infer the existence of heat rays, as well as of light rays in a beam of sunlight. But this is not all. If a piece of photographic paper be placed upon the spectrum, it will be most blackened at, and even beyond, the blue and violet rays, than elsewhere. Here, then, are rays which produce chemical change in bodies. They are termed actinic rays, their influence is termed actinism. Let us now trace the footsteps of these three classes of rays in Nature.

If we were to compare a plant, growing in the dense and shadowed recesses of a forest, with another fully exposed to the sun's rays, the pale blanched hue of the former would be at once apparent. Here then we see one of the effects of the light rays. Again, if we take a plant from the open air, and place it in a darkened room where light is admitted through a single scanty window, a change is soon visible. The plant sickens and becomes pale. The leaves, furthest from the light, lengthen their stalks and rise into a position in which they can obtain more copious draughts of the health-giving stream. The whole plant turns towards the window, as if yearning for the sun. If it be now removed from its prison, and exposed to a full flood of light, its health returns and it soon loses its pallid hue.

In the vegetable world, then, light and colour are intimately associated, and we shall find presently that this is the case in the animal world also. The gorgeous hues of tropical vegetation are painted by the sunny skies of the climes where it grows. Our flowers are faintly tinted by the side of those of these glowing regions; and it is wisely ordered that subdued tones prevail in the quiet light of such skies as ours—bright hues would seem out of place.

The presence of chlorophyll—a compound substance—in the cells of plants is the cause of their green colour. The light rays are the chief agents in

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producing this compound. Woody tissue will not form to any available extent without the influence of these rays. Deprived of them the massive oak would grow up a pallid fragile plant, destined to perish without ever fulfilling its useful destiny.

Light stimulates plants to respiration, for they breathe as well as we, and in the dark hours of the night they repose with us. In the daytime they inhale the carbonic acid of the atmosphere, and breathe forth oxygen; in the night, too, they still drink in carbonic acid, but it is in scanty draughts compared with those taken under the stimulus of light.

Let us now turn to the animal world. The Proteus anguinus appears to be independent of the invigorating influence of light; but it is an exception to the general law of organized life, which enacts that light is necessary for healthy development.

In the experiments of Professor Forbes in the Ægean Sea, the effect of light upon animals was strikingly illustrated. It was found that, at great depths, the tenants of the deep are mostly white or colourless, and the colours increase in brilliancy and intensity as we ascend towards the light. Again the lustrous hues of the denizens of tropical regions contrast with the more sober tints of colder climes.

A box containing twelve compartments was so pierced with holes that water could readily flow through it. A tadpole, previously weighed, was placed in each compartment, and the box was then sunk some feet below the surface of the Seine. Others were also put in a vessel of Seine water and exposed to the light. These soon passed through their metamorphosis; but of the twelve sunk in the river ten retained their form, though many had increased greatly in weight. All the tadpoles when put into the water were at the natural size for undergoing metamorphosis, and yet the submerged ones appeared unable to pass through it. The stimulus of light was needed.

Again, in the Medical Gazette of 1832, we read: "There is at present, in Paris, an artist of the Louvre, an eminent historical painter, of the name of Ducornet, who paints with his feet. He was born without arms, of poor parents, at Lille. There are also about the French metropolis a number of beggars, twelve or thirteen of them at least, all deformed in various ways, and all born at Lille, in certain dark caverns under the fortifications. The effect of these places, from their want of light, in producing malformed births is so notorious, that the magistrates of Lille have issued strict orders to prohibit the poor from taking up their abode in them." Sir A. Wylie tells us that the cases of disease on the dark side of a large barrack were thrice the number of those on its sunny side for many years.

It has been often asked whether light does not become latent—is it not partially absorbed by bodies exposed to it?

A polished old coin revealed its inscription in faintly-luminous characters when placed upon a heated piece of iron in the dark. Brewster gives a list of nearly sixty minerals which possess this property of phosphorescence. The human hand is said to be luminous in the dark for some minutes after exposure for half an hour to strong sunlight. "If a nasturtium is plucked during sunshine," says Hunt, "and carried into a dark room, the eye, after it has reposed for a short time, will discover the flower by a light emitted from its leaves."

Humboldt shows that the earth is luminous; and though a part of this earth-light may be due to chemical or electro-magnetic causes, it is asked if a part is not due to the emission of light absorbed in the day?

Some experiments of Professor Moser are very curious. From them it appeared that if a polished plate of silver was kept very near to a cameo of horn or agate, with white figures upon a dark ground, for ten minutes, the figures of the cameo produced an impression upon the plate which might be made visible by exposing it to the vapour of mercury or water. Other similar results were obtained.

We have before alluded to the bending of plants towards the light. The blue rays have been found to be the most powerful in producing this effect; plants turn from the red rays.

The light which is reflected to us from the blue sky is polarised—or, to employ Newton's idea, resembles a flat stick, if we liken an ordinary ray to a smooth round rod. Polarised light possesses peculiar properties which we must not stay to detail here. Wheatstone's polar clock depends upon this peculiarity; on being directed to different parts of the sky, this instrument indicates the apparent solar time with great accuracy.

We now turn to the heat-rays of a sunbeam. About one-third of those which impinge upon our atmosphere are absorbed by it, so that the air screens us from the full intensity of the sun's heat. As we descend into the earth the temperature increases; but there is a certain stratum whose temperature is always the same. The caves of the French Observatory have steadily remained at 53° Fahrenheit; they are ninety feet below the surface. Some mines have a perpetual spring. The heat absorbed by the earth's crust in summer is of great utility in the cold season of winter.

Heat appears to have great influence upon vegetable irritability. The Desmodium gyrans of the banks of the Ganges moves its leaflets perpetually both by day and by night. But this curious plant is motionless except where the temperature is about 100°. The sensitive plant requires artificial warmth in our climate; and although we are not destitute of instances of vegetable irritability, we have nothing analogous to the Desmodium gyrans.

When Franklin placed pieces of differently-coloured cloth upon snow, he found that the sun's rays melted the snow more rapidly beneath some colours than beneath others. The order of absorption of heat is black, brown, green, red, yellow and white; so that black clothing drinks in the sun's warmth more greedily than that which is of a light colour. However, those bodies which readily absorb heat part with it freely also—in philosophical language they have high radiating powers.

Heat is a chief agent in producing the trade winds. The heated air of the equatorial regions mounts upwards into the higher regions of the atmosphere, and colder air rushes in laterally to supply its place. This constant interchange of air between the equator and the poles, and the rotation of the earth, conjointly occasion these well-known winds.

The actinic rays now demand notice. They appear to be especially powerful in producing the germination of seeds, whilst the light rays actually seem to be opposed to this development of vitality. The stem of a young plant grown under the influence of the actinic rays remains soft, and extends to a great length without enlarging in diameter. It is said that gardeners use deep blue glasses to aid cuttings in putting out roots.

Actinism is less known as to its effects upon the animal kingdom. The different hues of the human race, freckles and sunburn, are all probably dependent, in part at least, upon the actinic rays of the sunbeam Chlorine and hydrogen gases, mingled in combining proportions, do not unite in the dark; but if the mixture is exposed to the light of the sun,

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they at once combine and generally with a violent explosion. If the chlorine alone is held in the sunshine it will afterwards unite in the dark with hydrogen.

The actinic rays produce an effect upon the granite rock as well as upon the delicate plant. But in the night these effects are wholly or in part obliterated. But for this nocturnal rest the hardest crag would perhaps soon perish.

Actinism has given us one of the most pleasing arts of modern times. We mean Photography. The broad outlines of Daguerreotype process may be readily sketched. A polished plate of silvered copper is subjected to the vapour of iodine, and is then transferred to what is usually a species of camera obscura. The image of any desired object speedily depicts itself upon the prepared plate, which is then removed from its dark receptacle and exposed to mercurial vapour. The picture now appears, and has to be rendered permanent by immersion into solution of hyposulphite of soda. If desired, it is then tinted by the artist's brush.

The Talbotype process is somewhat different. Paper dipped in a weak solution of salt, and with a solution of nitrate of silver applied to one of its sides, is placed, after being dried in the camera obscura. It is then washed with hyposulphite of soda.

In the Calotype, which is a mere variety of the above process, expensive chemicals are made use of.

In the two last processes the pictures are negative ones—the shadows form light marks, and the lights dark ones. But the pictures are easily made to yield positive copies.

Strange to say, our own comparatively dull sky is far more favourable for Daguerreotyping than the most brilliant one of the tropics. The sun itself is only marked on the plate by a spot.

Some experimenters have thought that electricity is also resident in the sunbeam, others have failed in discovering this principle.

In the palm-stoves at Kew, a greenish-yellow glass has been made use of to exclude the scorching heat rays of the solar-beam.

It is found that the actinic rays are most abundant in spring, the luminous in summer, and the calorific in autumn; and the same law appears to obtain in the daily distribution of these rays. In the morning we have the actinic, at noon the light, and in the evening the heat rays most prevalent.

Here our remarks close; and if they have more clearly unfolded the goodness and wisdom of Him who darts down the sunbeam on its errand of light and love, they have not been in vain.

PASSAGES FROM THE JOURNALS OF AN OLD TRAVELLER.—

No. II.

NAPLES, AUGUST 1848—MERGELLINA—TOMBS OF VIRGIL AND SANAZZARO—PALM TREE, &c.

One afternoon we went to Mergellina, beyond the fashionable suburb of the Chiaja and at the commencement of the Strada Nuova of Posilippo, to dine with a family of old English friends.

They occupied a pleasant, and to me well-known villa between the cliffs of those lovely hills which the ancients held to be a cure for grief, at the western inner corner of the bay. On one side of the villa, close

at hand, stands the little church which contains the ashes and cenotaph of the Neapolitan poet, Sanazzaro; and on the other side, a little farther off and higher up the hill-side, stands the ancient tomb which bears the name, and with a pleasant and not unreasonable belief is thought to have once contained the ashes, of Virgil. Close in front of the villa, at the angle of a garden wall, stands and grows, as it stood and grew when I was first here, and long before my time, one solitary and consequently unproductive Oriental palm tree—a most noticeable tree, for it is the only one of the species in Naples, or near to it, growing in the open air. Indeed, within the limits of the kingdom I can remember only two others, and those were growing far off, at Brundusium. Few travellers who have been at Naples can have failed to remark or to remember that solitary Oriental palm at Mergellina. In many a walk and many a ride it was my cynosure: I had almost a religion for it; and I do not believe that, whether alone or with joyous comrades, I ever passed it with heretical neglect. When I first knew it I was young, a stripling, a boy; and I believe that that innocent and unconscious tree helped to give "an Oriental twist" to my imagination. I saw it again as a dear old friend. I could have hugged its rough, cocoa-nut-looking stem, and kissed its broad, long pendant leaves; which are not leaves but majestic plants, or a world of leaves thrown into one. The villa had a long terrace, trellised and canopied with vines, and overlooking the bay, the Chiaja, the Villa Reale, the Castella dell' Uovo, and Vesuvius—an exquisite promenade in the cool of the evening. There were some drawbacks to the "locality;" but the interior of the house seemed to embody the very perfection of living—the Italian luxury of spacious rooms and lofty ceilings, and a genial warm atmosphere which one woos with open doors and windows, and English neatness and arrangement and domestic comfort.

NAPLES: PICTURES.—In the picture gallery of the Museum I was disappointed and vexed. They had changed the position of all their first-rate paintings. Not one was left hanging where it used to hang: I had a difficulty in finding out my old familiar friends; and when I found them I thought that, in nearly every instance, the change of position had been a change for the worse. The Raffaeles, the Correggios, the Titians, the Spagnolettos, the Velasquez, the Salvator Rosas, the Claudes, were certainly in worse lights. It appeared that they were going to change places again, for some of them were taken down, many of the figures placed above the frames were undergoing alteration; and a great many new pictures (or rather old pictures, but new additions to the collection) were strewed on the floor, waiting for places on the walls whereon to be suspended. The whole place had a littered, neglected, slovenly appearance. For a very long time the directors of this Neapolitan gallery have been guilty of the error of substituting quantity for quality. They might have an admirable small collection, but they will have a large one, and the consequence is that three-fourths of their pictures are rubbish. The visitor tires his eye with the bad before he gets to the good. Preserving all such works as may be interesting as links in the history and progress of art, I would discard, reject, and utterly cast out hundreds of their pieces which have no such claim to regard, and which are at best but servile imitations or specimens of an insupportable mediocrity. Then there would remain a compact and most choice collection, and some half-dozen of rooms might be given up to other departments of

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the museum, of which several are crowded and require more space. This is particularly the case with the most interesting department of all, the incomparable, unique collection derived from Herculaneum, Pompeii, Stabia, Pæstum and other places. These materials, moreover, are constantly on the increase, so that more and more room will be wanted.

Gaieta.—As we entered this ancient town in the brief twilight, we passed a tall, gaunt, and very ancient dame, who was seated on a stone near the gate, with a distaff in her left hand, and the coarse thread she was making in the other. The distaff and her primitive process were precisely those we see in ancient sculpture, vases, tombs, &c. The old dame's long grey hair hung loosely over her cheeks and neck; her whole dress was quite as primitive as her distaff; and her features seemed cast in the antique and Asiatic mould. She might have been taken for the Trojan nurse of the pious Æneas, the venerable Gaieta, who, according to Virgil, died here and left her name to the place for ever.

Shortly after we had dismounted at our inn, the bright full moon shone upon the bay, edging the trembling waves with silver, as on that fair night when Æneas and his fleet hoisted their sails here in the little port beneath, and steered for the promontory of Circe; and as the *vento di terra*, or regular land breeze, began to blow, we saw a little fleet of boats, of primitive or very ancient form, lift anchor, spread their curiously-shaped sails, and make for the same promontory, the ancient name of which is only Italianized in its modern designation *Circello*. This preservation of ancient names imparts a constant interest to all these regions of southern Italy. Take the ablative instead of the Latin nominative, and you find nearly every river or little stream, every mountain and cape, called as it used to be in the days of the Roman commonwealth. At times one is almost startled by hearing the classical sounds from the most uneducated of the peasantry. "Where do you come from?" said we to a poor old fellow who was begging in the streets of Capua. "Gentlemen," said he, "I come from a village behind Monte Tifate." Here was the Mons Tifata of the Roman writers. The mariners of Gaieta had no fear of finding Circe and her brutalizing potions; but our host at the inn told us that he expected some of them would bring him back a good supply of pigs, Monte Circello and the country near it being famous for swine, both wild and domestic.

On the shore, at a very short distance from this old town, we visited those Roman ruins which every one now believes to be the remains of Cicero's celebrated Formian villa. We also mused by the spot where the great orator is said to have been put to death, and where there are considerable remains of an ancient Roman tomb, or mausoleum, which generally passes as his. A shepherd boy was there playing on a very primitive pipe, made of a large strong canna or reed, brought from the river Liris. This river is a wide exception to the general rule: they now call it the Garigliano.

In a farmhouse near at hand, the family and the labourers were at table, all dining together, but the master of the house occupied the post of honour. The meal consisted of a vegetable pottage (chiefly cabbage or greens), into which slices of fat bacon were thrown, of bread of a dark yellow colour made of maize or Indian corn, of cheese made of buffaloes' milk, and a very large bowl of wild asparagus, dressed with a little oil and vinegar. This was rather a feast day than a fast day. The people seemed to thrive on their fare. The wild asparagus, though small and quite green,

had a most delicious flavour, far surpassing the product of our kitchen gardens. This afforded the dish in which Horace delighted when at his Sabine farm. Now, as then, the women go to the hill sides and gather it fresh every morning while it lasts. There was a female servant in the farmhouse that might have been a fit purveyor of asparagus to the poet. This morning she had brought in a perfect load of it.

This time I did not visit the fortress of Gaieta, nor had I on any previous occasion disturbed the repose of the mortal remains of the Constable Bourbon, whose name, as a word of fear, is preserved in the traditions of the people of Rome and Gaieta. As this great warrior and national renegade bore arms for the Emperor Charles V. against the church as well as against his own countrymen—as he was shot in the act of storming Rome, and died under the Pope's excommunication—he could not be allowed a burialplace in consecrated ground. As regard was due to his eminent services and rank and dignity, his body could not be abandoned or left in an unhonoured place; the Spaniards, therefore, had recourse to another expedient: they dried the body of the Constable like a mummy, and set it up in a recess near the gate of the castle of Gaieta. There, according to an old German traveller, it stood in the middle of the last century, very properly clothed, his boots being yellow, with red facings, and the stockings, which came a little above the boots, being bordered with fine lace. A governor of the city and castle had recently given the memorable skeleton an entirely new suit of clothes; the mantle was blue, trimmed with silver, the head was covered with hat and feathers, the sword of the warrior was at his side, and a cane leaned against his shrivelled right hand. Over the recess was a Spanish distich which may thus be rendered into English:—

"France gave me birth, Spain strength and fortune gave,
Rome my death-wound, and Gaieta a grave."

A Latin epitaph said in plain prose, "Here lies Charles of Bourbon, who, after enlarging the empire, defeating the French, conquering Italy, besieging the Pope, and taking Rome, lost his life in the moment of victory." Praises and gratitude were due from the imperialists to this brave, daring, and very skilful deserter from his standard and his king; but many of the honour-loving Spaniards of that period had little respect for the traitor. One of them burned his house to the ground, because, in obedience to his sovereign, he had been obliged to lodge the Constable in it for one night.

As we left Gaieta, several caravans of mules were taking their departure. Some were going towards Rome, some to Sessa or Simuessa, a town of the Volscians, others on to Capua; all to some place named and famed in history or in poetry, or in both. We were soon on the Appian way, the rough paving-stones of which, placed there by the old Roman road-makers, appear in several places. We rested (sleep we could not) that night at an inn by the side of a canal in the Pontine Marshes, which appeared to be, in every respect, a lineal descendant of Horace's inn at the Forum Appii. We had the same gnats and mosquitoes, the same wrangling muleteers, the same croaking frogs, the same surly innkeeper, the same singing in turns (of very rough voices), and the same general confusion as disturbed the susceptible nerves of the poet. The autumn was far advanced towards winter. Had it been in the hot season of the year, we probably should have carried away with us a malaria fever. The unhealthiness of the Pontine Marshes scarcely admits of exaggeration.

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FREEZING OF THE RIVER NEVA, AT ST. PETERSBURG

ST. PETERSBURG.

WHEN Alompra, the Burman conqueror, asked an English officer whether the ponds in his country were ever coated with ice, and the Englishman replied that, at London, he had seen a great fair held for seven days, and an ox, roasted whole on a great river, the semi-barbarian of the east and all his courtiers expressed their incredulity by a loud laugh. What would these men have thought had they been told that there was a river in Europe, on the ice of which these things might be done, not for seven days, but during five months of every year.

St. Petersburg, though not the most northern of capitals, is undoubtedly the coldest. Many physical circumstances contribute to the production of this intense cold. Foremost must be placed the shallowness of the nearest sea, and the immensity of fresh water in the neighbouring country. The principal of these reservoirs are the lakes Onega, Ilmen, Saïma, and Ladoga, the last being the largest lake of Europe. The surface presented by all the four lakes is estimated at one thousand five hundred and six leagues of twenty-five to the degree. They are all fed by rivers and numerous streams which flow through cold regions. The different streams flow into the Onega, whose length, from north to south, is one hundred and ninety versts, and its breadth, from east to west, seventy versts.* It empties itself into the Ladoga by the Sveer, a river two hundred and two versts long, and spreading in some parts to two hundred versts in breadth.

The Ilmen is about fifty-five versts long and thirty wide: it receives eleven streams, and has its outlet into the Ladoga by the Volkoff, a

* The Russian verst measures 3,500 English feet. The English mile contains 5,280 of our feet.

river rather longer than the Sveer, with an average breadth of one thousand four hundred feet.

The Saïma is about one hundred and fifty versts long, and one hundred and twenty broad: it pays its tribute to the Ladoga by means of the Voxa, a river about one hundred and eighty versts in length, and very irregular in its breadth and direction.

The mighty Ladoga, in addition to all these bodies of water, is fed by thirteen other streams. It is about one hundred and seventy-five versts long, and one hundred and five broad, and of an oval form. Its waters find their way to the sea through the Neva, which, though called a river, is properly a Bosphorus, or strait. The length of the Neva, from the Ladoga lake to its mouth, is sixty-nine versts; its medium breadth is about one thousand five hundred feet; its depth (in many places considerable) is generally, in the channel, about fifty feet. Its direction is that of a straight line from east to west. At all seasons the Neva brings with it a current of cool air. From such an accumulation of waters, on which evaporation, however intense the solar heat while it lasts, acts but during three or four months in the year, it is natural to expect an immense outflowing: and accordingly we find the Neva carries into the gulf of Finland upwards of one hundred and sixteen thousand cubic feet of water in a second; a fraction of which proceeds from eight small rivers, which fall into it during its course from the Ladoga to St. Petersburg. The ordinary velocity of the river is about thirty-seven inches per second.

At St. Petersburg the Neva divides itself into several deltoidal branches, the largest of which is one thousand two hundred and sixty feet broad; and bears along a mass of about seventy-four thousand cubic feet of water in a second, while the Nile, in the same time, furnishes but twenty-one thousand eight hundred cubic feet.

That such a body of water, moving at the rate of about two miles and one furlong in an hour, should be annually covered with a sheet of ice, seldom less and often more than three feet thick, while the mean temperature of the air during the winter months is seldom lower than 4° 5′ of Reaumur's thermometer, appears surprising; nor could it happen but for the combination of two circumstances, neither of which would be alone sufficient: these are the drift ice from the Ladoga, and the long duration of the winter.

The drift ice from the Ladoga generally comes down about the middle of November, sometimes in October, and sometimes, though more rarely, not till December. The cold is so sudden and so violent, that twenty-four hours are sufficient to form round the edges of northern lakes a cake of ice from two to five inches thick, which is almost as soon broken up by the storms to which these lakes are subject. This event is immediately announced to St. Petersburg by telegraph. The police are on the look-out, and in about twenty-four hours, more or less, the arrival of the first flakes gives the signal for removing the bridges of boats, by which the communication across the river is established. Soon after large sheets of ice come floating down and announce the setting-in of the winter. At this time one of the bridges is frequently removed and replaced, to the great inconvenience of the inhabitants of the capital. Vehicles of every description remain crowded on either bank, while large boats, loaded with passengers, are seen forcing their way through shoals of drifting ice, by which they are often carried down a considerable

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distance. It is now impossible to replace the bridge; the passage becomes more and more difficult for the boats, and is finally interrupted altogether. Unhappy, then, are those whom affection, business, or pleasure call to the opposite side: the distance is only a few paces, but the passage is impracticable. This painful suspense lasts a few days, seldom a week.

If the lake ice has been broken into small pieces, these sometimes pass on to the gulf without encumbering the river; and when they are all gone by, the bridge is replaced, and things remain as before till the arrival of a fresh batch. If, on the contrary, the flakes are large, they get jammed one against the other, and not only fix themselves, but arrest the progress of the succeeding masses. Between them, however, are large spaces quite clear of ice. In this state, a violent wind is sometimes sufficient again to detach and break the flakes and allow them to proceed, when the river again becomes free. This, however, is not frequent; and, as we have said, when the large flakes fix, the communication is for a while wholly interrupted; not that the ice will not bear, but because of the unfrozen spaces, so much the more dangerous as they are smaller, for then, a pellicle of ice being soon formed, they become covered with snow and are hidden.

The ice being now firmly fixed, a number of men are set to work to clear away the space immediately below the bridge: it is then again swung round and definitively placed for the winter. The large space thus cleared, remains uncovered for several weeks, freezing but very gradually from the edge of the ice which surrounds it: a proof that the current is too rapid to be frozen over in ordinary winter if there were no ice brought down from the lake.

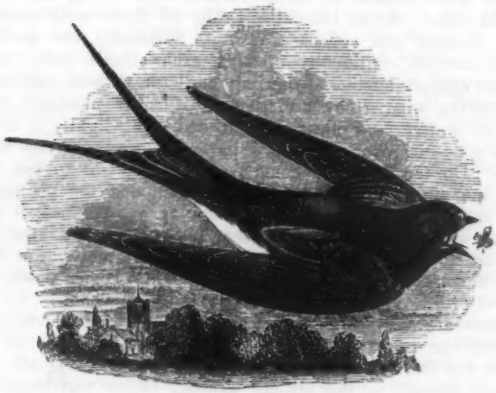
The temperature of the air is now sensibly colder; and in a short time, except in the part we have mentioned just below the bridge, or in any other equally large spot, if such there be, there is everywhere a thickness of ice sufficient for foot passengers, who are now seen crossing the frozen river in all directions. In a few days more the passage is judged practicable for carriages and sledges. Broad roads are then marked off by rows of fir branches stuck upright, and slopes of planks are constructed from the quays to the ice. The river now assumes the aspect of a flat-bottomed valley covered with snow: the carriages, sledges, merchandise, pedestrians, and troops passing and repassing in all directions, excluding the idea of the deep and rapid waters rolling beneath.

This state of things lasts generally about five months.

The drift ice from lake Ladoga is, on its first arrival at St. Petersburg, seldom more than two and a half inches thick, but it soon attains to the thickness of forty inches, and very often more. Generally people may be said to walk and drive over a compact sheet of ice of the thickness of three feet six inches.

From tables which have been carefully kept, it appears that in the long period of one hundred and fifty years, the ice has never broken up before the 6th of March, and only once at that early period; that the general period of its breaking up is from the 5th to the 15th of April; that the congelation has commenced a few times in October, but that the general period for the annual freezing is from the 5th to the 20th of November; and, finally, that the navigation of the Neva may be said to be free for a period of seven months, and frozen over the remaining five months of the year.

OUR NATIVE SONGSTERS.



THE SWALLOW.

EVERY one who at all observes the mere external aspects of nature, the changing seasons, the budding trees, and the opening flowers, has become acquainted with the Swallow. We all look with pleasure on the first swallow, which in April skims through the air before us: and though, as the proverb common to most European nations expresses it, "One swallow does not make a summer," yet is even the stray bird an indication of coming multitudes, and of all beauties and delights associated with that rich season. Even the inhabitant of the city, far from the wild flowers and green boughs which he loves so well, watches for the coming of the first swallow, and thinks of the lanes and meadows among which the pearly white-thorn is beginning to bud, and where the violet, and primrose, and anemone, and bluebell peep through the hedges; and where the cottage chimney, which the swallows have long haunted, rises above the garden plots, gay with polyanthuses and daffodils, and sweet-scented wallflowers. And when, a few days after, even the last bleak wind of winter has ceased to stir the woods, and the birds, rejoicing in sweet vernal showers, come in great numbers, we hail them with delight, and wonder not that the prophet Jeremiah, while lamenting the faithlessness of God's chosen people, should remind them of the constancy of the migratory birds, he says: "The stork in the heavens knoweth her appointed time, and the turtle, and the crane, and the swallow, observe the time of their coming." We wonder not that the people of Greece, ever loving the sunshine, ever alive to the genial influences of nature, held a festival at their arrival; and that children went about the cities and villages in procession, receiving presents at every door, and stopping to chant, to the sound of musical instruments, a welcome to the swallow. Well might Sir Humphry Davy call this bird the joyous prophet of the year, the harbinger of the best season, leaving

the green meadows of England in autumn, for the myrtle and olive groves of Italy, or for the tall palms of Africa, and coming to us as it does early in April.

Nor is it alone because of its association with spring that we value the swallow tribe. At all times the habits of these birds are interesting, their motions and actions elegant. Skimming the air in most graceful evolutions, continually crossing each other's path, yet never striking one against another—wheeling on high without any confusion, and on untiring wing—they are, though of sober plumage, the most beautiful of birds. Now they descend and skim lightly a little way above the grass, or over the city's pavement, and we say that rain is coming. Do the swallows come from their height to tell us this? Nay, but the air is already humid and chill, and the preceptions of the insect tribe have discovered it, though as yet we feel it not, and their slight wings refuse to carry them high in air, and the swallow knowing this too, by his sensations, or by that great power of sight which can alone conduct him safely with rapidity, comes down to hunt for his insect-prey.

Many birds are very conscious of approaching atmospheric changes, and may well be relied on as giving indications of these in various ways. Nor is it the bird alone which is thus influenced. All animals, which living entirely in the air are exposed to its variations, are far more cognisant of these changes than we are. Thus the frogs croak in the pool, and the cattle run wildly over the meadow, and eat with unusual voracity their meal from the grass; the ants bring back the chrysalides to their nest; the earthworm comes up to the surface, to respire the welcome moisture; and the very fishes in the pool seem to know that rain is coming, and arise up to the surface. Yet the shepherd cannot feel these changes, though he may observe their prognostics, and see how the leaves of the clover-field are standing upright, and the scarlet pimpernel is folding its petals, and hear more clearly the usual sound of some distant sheep-bell, or of some trickling waterfall, as it comes down the slope of the hill.

We have four species of the Swallow tribe:—The Common Swallow (*Hirundo rustica*), the Martin (*Hirundo urbica*), the Sand Martin (*Hirundo riparia*), and the Swift (*Cypselus apus*), all alike, in many of their habits, and all coming with the spring, and leaving us in autumn for warmer lands. The Swift is, as Bishop Mant has described it, the latest in arriving. Writing on the month of April, he says:—

"The threefold tribe of swallows haste
In thy first days, or ere to waste
Thy midmost course has run. Nor fails
He of the pinion's broadest sails
To track their path, their brother Swift;
More late to come,
More prompt to quit his summer home,
Is he of all the fork-tail'd race,
As if his wintry dwelling-place,
Hard by the stormy Cape, or far
In regions of the Eastern star,
Forbade across the tedious way,
Or quick approach, or lengthen'd stay."

The value to man of the services performed by insectivorous birds

has been mentioned on an earlier page; and to no birds do we owe more gratitude for these uses than to the swallow tribe. The rapid flight, the determined vigour with which these birds pursue the winged insects, render them the most successful destroyers of a race which else would injure our crops, our gardens, our orchards, our green fields, and that, if left untouched for the summer's day, would, in the night, eat vegetation which a month's growth would not repair. The swallow never touches our fruits, nor asks one grain of the ripening corn, or the store of the granary. "The immense quantity of flies," says the author of the Journal of a Naturalist, "which are destroyed in a short space of time by one individual bird, is scarcely to be credited by those who have not had actual experience of the facts. I was once present when a swift was shot,—I may as well confess the truth—I was myself (then a thoughtless youth) the perpetrator of the deed: I acknowledge the fault in contrition, and will never be guilty of the like again. It was in the breeding season, when the young were hatched; at which time the parent birds, as is well known, are in the habit of making little excursions into the country, to a considerable distance from their breeding-places, for the purpose of collecting flies, which they bring home to their infant progeny. On picking up my hapless and ill-gotten prey, I observed a number of flies, some mutilated, others scarcely injured, crawling out of the bird's mouth; the throat and pouch seemed absolutely stuffed with them, and an incredible number was at length disgorged. I am sure I speak within compass, when I state, that there was a mass of flies, just caught by this single swift, larger than, when pressed close, could conveniently be contained in the bowl of an ordinary table-spoon!" It would be difficult to say why a marksman could find pleasure in shooting a swallow. Its flesh cannot be eaten, its plumage is useless, and so innocent and useful are its habits, that if we had no love for elegance and grace, and no feelings of humanity for the fowls of the air, it should be spared on the score of its utility. But those who shoot these, or other birds, in the spring, forget the sufferings which await the nestlings deprived of their parents; for these must die slowly of cold and hunger: they forget that the Great Father of us all cared for the animal race, when He gave them to us that we should have dominion over them. Not only have the inferior creatures been so made as that their very existence is an enjoyment to themselves, but the Law given to Moses enjoins, in various places, kindness and consideration both to the bird and the beast

The swallow tribe take their prey on the wing, and are ever delighting our eye as they do so, though two only of the tribe have any powers of song. Of the common swallow,* White, of Selborne, remarks: "He is a delicate songster, and in soft sunny weather sings both perching and flying; on trees, in a kind of concert, or on chimney-tops;" and though he who would make sure of hearing the swallow had need be an early riser, yet the low soft warble may be heard too of an evening, as Richard Howitt says:—

* The Swallow is eight inches in length, of which the outer tail-feathers measure five. Whole upper parts steel-blue; wings and tail black; all the tail feathers, except the middle pair, marked with white on their inner webs: forehead, chin, and throat chestnut, bounded below by a band of blue; under parts buff-white; beak and feet black.

"We heard amid the daybreak
Thy twitter blithe and sweet;
In life's auspicious morning,
The precious and the fleet:
We saw thee lightly skimming
O'er fields of summer flowers,
And heard thy song of inward bliss
Through evening's golden hours."

Nor is it uninteresting to mark the busy swallows in October, when they are preparing to migrate. For many days they may be seen, gradually gathering in greater numbers, sometimes in some tall trees, at others thickening over the walls, or on roofs of houses. How long it takes to get the assembly together; and, if we may infer anything from the perpetual noise, how many consultations seem necessary as to their mode of travelling, or their future prospect! At length the clamour ceases, and we look out on some morning to find that the swallows are all gone, perhaps to the east or west, to await the coming of some which may yet be lingering from carelessness or infirmity; but at length they are all gone away to the sunny south, and though some may remain on the southern shores of Spain, yet Africa is their grand winter dwelling-place. They have been often seen, both in autumn and in spring, crossing the Mediterranean, sometimes taking a short rest on the rigging of the ships, and even resting there a day or two to recover strength. Now and then they drop into the sea, and go on again, refreshed by their salt-water bath. But so strong is the desire at this season to go to warmer regions, that the bird surmounts all obstacles, and even forgets its young. Instances have been known in which the second brood was hatched so late in the season, that the swallows, whose care for their young is usually most incessant and affectionate, have gone and left their nestlings to perish. Dr. Jenner observed a pair of martins which thus forsook their unfledged young, and returning in the following May to their old nest, had first to remove from their dwelling the skeletons of the hapless little birds. Strong indeed must be the mysterious impulse of migration, when it can overcome the powerful and better understood principle of the love of its young.

SLEEP.

Morpheus, the humble god, that dwells
In cottages and smoky cells,
Hates gilded roofs and beds of down;
And, though he fears no prince's frown,
Flies from the circle of a crown.

Come, I say, thou powerful god,
And thy leaden charming-rod,
Dipt in the Lethean lake,
O'er his wakeful temples shake,
Lest he should sleep and never wake.

Nature, alas! why art thou so
Obliged to thy greatest foe?
Sleep, that is thy best repast;
Yet of death it bears a taste,
And both are the same thing at last. Denham.